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EXAMINER

HUSBAND, SARAH E

ART UNIT PAPER NUMBER

1746

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Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/17/2006 has been entered.

Response to Arguments

Applicant's arguments, see Remarks, filed 5/17/2006, with respect to the rejection(s) of claim(s) 1, 13 and 16, 17, 21, 23, and 24 under 35 USC 102 have been fully considered and are persuasive. Therefore, the 102 rejections have been withdrawn. However, in light of the amendments and upon further consideration, a new ground(s) of rejection is made in view of Lindner in view of Shibagaki. The claims dependent from claim 1 will also reflect the new grounds of rejection and therefore the arguments regarding these claims are moot.

Applicant's arguments filed 5/17/2006 have been fully considered but they are not persuasive. The arguments regarding the 103(a) rejection of claims 16, 17, 21, 23 and 24 are not persuasive. Applicant argues that Taatjes does not have all of the limitations of newly amended claim 16. However, this is not persuasive because the combination of Lindner and Taatjes would disclose the invention described in claim 16 as was previously rejected. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on

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combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The arguments which are directed toward the claims dependent on claim 16 are also not persuasive as claim 16 is not in a condition for allowance and still reads on the prior art of record.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 13 are rejected under 35 U.S.C. 103(a) as being anticipated by Lindner (US Patent Application Publication 20020002991 A1) in view of Shibagaki (US 6,824,621).

Lindner discloses a substrate treating apparatus having an inner process region (Fig. 4, Item 17), a rotatable substrate support member having a rotatable flywheel (Fig. 2, Item 17), a stationary tubular body (fixed central hub member) (Fig. 2, Item 8) having a plurality of gripping elements (engaging members) (Fig. 2, Item 19), and the central member having a plurality of fluid supplying lines (nozzles) with one as a gas dispensing nozzle (Fig. 2, Items 22, 24 and 26) and at least one frontside fluid dispensing nozzle (Fig. 4, Item 28; paragraphs 34-40; paragraph 47). Lindner further discloses there can be a waveguide (substrate sensing assembly) to indicate whether a wafer is in place (paragraph 15) which is positioned outside the cell body because it extends into the bottom portion (Fig. 4, Item 36). Lindner does not specifically disclose that the cell body has an enclosed processing volume. However, it is

well known in the art to perform substrate processing in an enclosed volume to prevent contamination. Also it is shown by Shibagaki that the rotatable substrate treatment mechanism is enclosed in a sealed casing. Therefore, since it is well known in the art to provide an enclosed casing, it would be obvious to one of ordinary skill to modify Lindner with Shibagaki for the benefit of preventing contamination and also better containment of fluids.

Claims 2, 4, 5, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindner and Shibagaki as applied to claims 1 and 13 and further in view of Taatjes (US Patent No. 6,167,893).

Lindner and Shibagaki disclose the substrate treating apparatus shown above in the 103(a) rejection. They do not disclose engaging fingers being pivotally mounted. Taatjes discloses having a plurality of clamping arms (substrate engaging finger assemblies) each having an outer pivotally mounted substrate engaging member (Fig. 1, Item 112) and an inner fixed member (Fig. 1, Item 116; col. 2, ll. 26-60). Taatjes also discloses that the engaging fingers are pivotally mounted and each also has a fixed support pin (support post member) (Fig. 1, Items 112 and 110). Taatjes also discloses a horizontally positioned wafer holding notch having an angled surface to guide the substrate (Fig. 1, Item 117A) and the engaging member is positioned between an open position and closed position shown in Figure 1 with the arrows (Item 120; col. 2, ll. 26-67). Taatjes further discloses the outer engaging member is pivotally actuatable (Fig. 1, Item 114 and 120; col. 2, ll. 40-50). Taatjes discloses a post having a substantially horizontal surface and an angled centering surface

(Fig. 1; col. 2, ll. 49-57) and the fixed engaging member is inside of the pivoting member (Fig. 1 and 2A, Items 116 and 112). Lindner further describes a shield (30, 40). Although the shield (30) shown by Lindner is not attached to hub yet substantially covers the flywheel, it would be obvious to one of ordinary skill in the art to attach this member to the hub as shield (40) is also attached and the Courts have upheld that making elements integral is obvious, *Nerwin v. Erlichman* 168 USPQ 177 (PO BdPatApp 1969); *In re Wolfe* 116 USPQ 443 (CCPA 1958).

Lindner, Shibagaki and Taatjes are analogous art because they are from the same field of endeavor, wafer treatment apparatus. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Lindner and Shibagaki with Taatjes for the benefit of holding the wafer securely (col. 1).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lindner, Shibagaki and Taatjes as applied to claims 1 and 2 above, and further in view of Kuroda (US Patent No. 6,811,618).

Lindner, Shibagaki and Taatjes disclose the substrate treatment apparatus shown above in the 103(a) rejection. They do not disclose specifically an engaging finger member having a rounded leading edge with a first thickness and a tapering trailing edge having a second thickness less than the first thickness. Kuroda discloses the shape of the engaging fingers being curved and also tapering in thickness (Fig. 8, Item 110 and 112; col. 10, ll. 46-51). Lindner, Shibagaki, Taatjes and Kuroda are analogous art because they are from the same field of endeavor, wafer treatment apparatus. At the time of the invention, it would

have been obvious to one of ordinary skill in the art to modify Lindner, Shibagaki and Taatjes with Kuroda for the benefit of reducing air resistance when rotating the wafer (col. 10, ll. 48-50).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lindner, Shibagaki and Taatjes as applied to claims 1 and 2 above, and further in view of Maekawa (US Patent No. 5,775,000).

Lindner, Shibagaki and Taatjes disclose the apparatus shown above in the first 103(a) rejection. They do not disclose the engaging fingers pivotally actuated by the vertical movement of a shield. Maekawa discloses the engaging fingers pivotally actuated by the vertical movement of a cup (shield) (Fig. 3, 5; col. 4). Lindner, Shibagaki, Taatjes and Maekawa are analogous art because they are from the same field of endeavor, wafer treatment apparatus. At the time of the invention, it would have been obvious to modify Lindner, Shibagaki and Taatjes with Maekawa for the benefit of better controlling the wafer placement and supporting mechanism.

Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindner and Shibagaki as applied to claims 1 and 13 and further in view of Allen (US Patent No. 4,518,678).

Lindner and Shibagaki disclose the substrate treating apparatus shown above in the 103(a) rejection. They do not disclose a circulation breaker member attached to the central hub member. Allen discloses a raised baffle (circulation breaker) to prevent chemical backstreaming (Fig. 4, Item 35; col. 3, ll. 13-16). Although Allen does not show a plurality of

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the baffles, the Courts have ruled that the duplication of parts is obvious, *St. Regis Paper Co. v. Beemis Co., Inc.* 193 USPQ 8, 11 (1977); *In re Harza* 124 USPQ 378 (CCPA 1960). The baffle is placed on the support member, is shaped with a tapered leading edge and minimizes the formation of low pressure toward the center, preventing chemical backstreaming. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Lindner and Shibagaki with Allen for the benefit of preventing backstreaming.

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindner and Shibagaki as applied to claims 1 and 13 and further in view of Orii (US Patent No. 6,863,741).

Lindner and Shibagaki disclose the apparatus as shown above in the 103(a) rejection. They do not disclose a light emitter and light detector or its position. Orii discloses a wafer inspecting section having an optical sensor containing a light emitting and light receiving (detecting) element in the wafer path (parallel to the wafer position), which can sense whether a wafer is present or whether it is held normally. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the wafer treatment apparatus shown by Lindner and Shibigaki with an optical sensor having light emitters and detectors shown by Orii for the benefit of not only detecting the wafer's presence but also sensing if the wafer was held normally (col. 5, ll. 10-20; Fig. 3, Items 31 and 32).

Claims 16, 17, 21, 23, 24 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindner in view of Taatjes.

Lindner discloses a substrate treating apparatus having an inner process region (Fig. 4, Item 17), a rotatable substrate support member having a rotatable flywheel (Fig. 2, Item 17), a stationary tubular body (fixed central hub member) (Fig. 2, Item 8) having a plurality of gripping elements (engaging members) (Fig. 2, Item 19), and the central member having a plurality of backside fluid supplying lines (nozzles) with one as a gas dispensing nozzle (Fig. 2, Items 22, 24 and 26) and at least one frontside fluid dispensing nozzle (Fig. 4, Item 28; paragraphs 34-40; paragraph 47). Lindner further discloses there can be a waveguide (substrate sensing assembly) to indicate whether a wafer is in place (paragraph 15) which is positioned outside the cell body because it extends into the bottom portion (Fig. 4, Item 36). Lindner does not disclose engaging fingers being pivotally mounted. Taatjes discloses having a plurality of clamping arms (substrate engaging finger assemblies) each having an outer pivotally mounted substrate engaging member (Fig. 1, Item 112) and an inner fixed member (Fig. 1, Item 116; col. 2, ll. 26-60). Taatjes also discloses that the engaging fingers are pivotally mounted and each also has a fixed support pin (support post member) (Fig. 1, Items 112 and 110). Taatjes also discloses a horizontally positioned wafer holding notch having an angled surface to guide the substrate (Fig. 1, Item 117A) and the engaging member is positioned between an open position and closed position shown in Figure 1 with the arrows (Item 120; col. 2, ll. 26-67). Taatjes further discloses the outer engaging member is pivotally actuatable (Fig. 1, Item 114 and 120; col. 2, ll. 40-50). Taatjes discloses a post having a substantially horizontal surface and an angled centering surface (Fig. 1; col. 2, ll. 49-57) and the fixed engaging member is inside of the pivoting member (Fig. 1 and 2A, Items

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116 and 112). Lindner further describes a shield (30, 40). At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Lindner with Taatjes for the benefit of holding the wafer securely (col. 1).

Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindner and Taatjes as applied to claim 16 and further in view of Kuroda.

Lindner and Taatjes disclose the wafer treating apparatus shown above in the 103(a) rejection. Taatjes also discloses an engaging notch at the upper and inside end of the engaging assembly (Fig. 1, Item 117). Taatjes does not disclose specifically an engaging finger member having a rounded leading edge with a diameter and a tapering trailing edge having a second diameter less than the first thickness. Kuroda discloses the shape of the engaging fingers being curved and also tapering in thickness (Fig. 8, Item 110 and 112; col. 10, ll. 46-51). At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Lindner and Taatjes with Kuroda for the benefit of reducing air resistance when rotating the wafer (col. 10, ll. 48-50).

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lindner and Taatjes as applied to claims 16 and 21 above and further in view of Maekawa.

Lindner and Taatjes disclose the apparatus shown above in the first 103(a) rejection. They do not disclose the engaging fingers pivotally actuated by the vertical movement of a shield. Maekawa discloses the engaging fingers pivotally actuated by the vertical movement of a cup (basin shield) (Fig. 3, 5; col. 4). At the time of the invention, it would have been

obvious to modify Lindner and Taatjes with Maekawa for the benefit of better controlling the wafer placement and supporting mechanism.

Claims 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindner and Taatjes as applied to claim 16 above, and further in view of Allen.

Lindner and Taatjes disclose the wafer treatment apparatus shown above in the previous 103(a) rejection. They do not disclose circulation breakers. Allen discloses a raised baffle (circulation breaker) to prevent chemical backstreaming (Fig. 4, Item 35; col. 3, ll. 13-16). Although Allen does not show a plurality of the baffles, the Courts have ruled that the duplication of parts is obvious, *St. Regis Paper Co. v. Beemis Co., Inc.* 193 USPQ 8, 11 (1977); *In re Harza* 124 USPQ 378 (CCPA 1960). The baffle is placed on the support member and extends outward and upward toward the substrate as can be seen in Figure 4. Although Allen doesn't specifically disclose the baffle floating above the rotating flywheel, when combining Allen's baffles with Lindner's fixed and stationary portions of a rotation mechanism, one of ordinary skill in the art would realize that in order to reduce the backflow of liquid, the baffles must be attached to the stationary portion in order to accomplish this task. Taatjes further discloses the chuck can be made of a plastic material and therefore, it would be within the level of one of ordinary skill in the art to modify the plastic chuck shown by Taatjes with plastic baffles for the benefit of preventing chemical backstreaming and having an apparatus made of one continuous material. Therefore, it would have been obvious to one of ordinary skill in the art to modify the structure shown by Lindner and Taatjes with the baffles for the benefit of more effectively cleaning a wafer.

Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindner and Taatjes in view of Orii (US Patent No. 6,863,741).

Lindner and Taatjes disclose the apparatus as shown above in the 103(a) rejection. They do not disclose a light emitter and light detector or its position. Orii discloses a wafer inspecting section having an optical sensor containing a light emitting and light receiving (detecting) element in the wafer path (parallel to the wafer position), which can sense whether a wafer is present or whether it is held normally. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the wafer treatment apparatus shown by Lindner and Taatjes with an optical sensor having light emitters and detectors shown by Orii for the benefit of not only detecting the wafer's presence but also sensing if the wafer was held normally (col. 5, ll. 10-20; Fig. 3, Item 31).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah E. Husband whose telephone number is (571) 272-8387. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael E. Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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